

## NOTE

DATE: November 13, 2008

SUBJECT: EAct/EISA Test Program Update

TO: RFS2 Docket EPA-HQ-OAR-2005-0161

FROM: Constance Hart, Assessment and Standards Division, OTAQ

This memorandum serves as an update to the presentation given to the Coordinating Research Council (CRC) Emissions Committee, May 22, 2008, on an overview of ethanol related light duty vehicle testing funded by the Energy Policy Act (EAct) and the Energy Independence and Security Act (EISA).

Updates to the programs described in the May 22 presentation:

### **Light Duty Gas Exhaust Fuels**

- The fuel matrix has been slightly revised to add more E20 fuels and reduce the amount of E15 fuels.
- Phase 1 is complete. Data is under review.
- Delays in cold room (for 50°F testing) set-up have pushed back Phase 2 testing until late November of 2008.
- Phase 3 testing due to start in February of 2009
- Testing to be complete by March of 2010

**Oil Study** is complete

### **PM Speciation**

- Setting up testing capabilities at ORD/NRML for 1065 compliancy.
- Designing round-robin testing program between ORD/NRML and NVFEL

**Nonroad Exhaust Program at Carnot Intertek** - expect completion by end of November 2008

### **Evap Testing**

- CRC E-77-2 program has completed testing. Data is under review.
- EAct/EISA funded E-77-2b program just began in October 2008. SwRI is sub-contracting with Harold Haskew & Associates so that the testing can remain at Automotive Testing Laboratories (ATL).
- Adding extra Static Permeation test at 105°F.

- Additional 3 vehicles have been defined as 1 PZEV and 2 model year 2000 enhanced evaporative emission vehicles.

### **Determine Percent of High Evaporative Vehicles in Fleet**

- Pilot program in Denver complete (July and August of 2008)
  - Proved out equipment methodologies
  - Conducted at IM Lane
  - 301 vehicles solicited
  - 196 vehicles were eligible
  - Recruited 87 vehicles for evaluation (44.4% acceptance rate for eligible vehicles)
  - 23 vehicles recruited to laboratory for SHED test.
- Second pilot is in process (October/November 2008) in San Antonio
  - Test out recruitment methods for non-IM area
- Larger program in San Antonio in spring of 2009

Since May of this year there have been additional programs added:

### **Nonroad Exhaust Test Program at SwRI**

Objective: To fill data holes between CARB and EPA for nonroad vehicles.

- Working with ARB small SI engine testing program to add on ammonia, HC speciation, PM/ECOC/sulfate emission sampling to 10 engines (Classes I-V, handheld and nonhandheld). Fuels to be tested include ARB E0 and ARB E10-7rvp test fuels. Two engines will be tested on EPAct #18 and Indolene for comparison to ARB fuel data.
- During ARB small SI engine testing program, assure measurement of NMHC done properly to not double count ethanol and acetaldehyde emissions
- In-Use 2 stroke nonroad motorcycles and ATV's (all terrain vehicles) on Indolene and ARB E10- 7 rvp test fuel and ARB E10-10rvp test fuel.
- One Large SI engine on Indolene and ARB E10-7rvp test fuel.
- Exhaust emission testing of two Marine sterndrive/inboard engines from ARB test program. Testing on Indolene and ARB E10 test fuel.
- One emission test per fuel per engine is being performed in order to obtain the most data from a variety of engines given the funding available.

The testing is mostly based on ARB E10-7rvp test fuel. Based on side by side comparison of EPAct #18 test fuels and ARB E10 test fuels, it was determined that the differences with ARB E10-7rvp had lower sulfur and lower RVP. However, at the time of the writing, it was understood that RVP would not have an impact on overall emissions with the exception of cold start. Cold start was only applicable to in-use 2 stroke engine testing (and hence an ARB E10 w/ 10rvp is being included for these engines) - all other

emission testing is with the engine hot. Lower sulfur is something being considered by EPA.

Timeline: Complete by summer of 2009 with option to do additional testing on small SI engines.

### **Supplemental Light Duty Gas Exhaust Fuels Testing**

Objective: Gather additional information to help us in interpreting results from the main fuel program

Program: Run FTP tests on 6 of 19 vehicles in main fuel program and 2 Tier 1 vehicles on all three Phase 1 fuels (E0, E10 and E15).

Timeline: Completed in November 2008